

Machinery.

INDEX TO VOLUME TWO.

September, 1895, to August, 1896.

Article.	Author.	Page.	Article.	Author.	Page.	Article.	Author.	Page.
About Ordering Work.		20	Casting Names on Beds and Frames.	W. L. Cheney	222	Engine, Setting the Valve of an.		28
Advertise, How to,	Wm. H. Ridgway	232	Centers, Eight Inch Swing Index.		182	Engineering, Bits of.	H. Heyrodt	374
Advertising, More About.	J. P. Williams	325	Chuck, A New.		150	Engine Construction, Sheet Steel in.	A. K. Mansfield	95
Advertising, Tracing the Results of.	Editorial	332	Chucking Drill, Self-Centering.		377	Engines, Erecting and Starting.	"Spike."	38, 68
Aluminum Alloy to Replace Brass.		171	Chimney, Demolishing a; Pile Driving.	S. Ashton Hand	328	Engine Room Notes.		
Among the Shops.		12, 73, 162, 242, 258	Chimneys, Sizes of.		289	The Most Economical Pressure to Carry.	W. H. Wakeman	71
American Moulder and His Art. Present, Past and Future Compared.	Simpson Bolland	147	Cincinnatus Push.		123	Two Plans.		162
America, In All.	Editorial	300	Condensers.	Wm. O. Webber	98, 354	Engine Details, Foreign.		355
American Foundrymen's Association.		312	Condensing Steam Engine.	F. F. Hemenway	395, 336	Engineering, Steam, Talks on.	Chas. L. Hubbard	360
Angular Work, Measuring.	J. T. Giddings	87	Cone Pulleys Again.		61	Facing Bar, A Handy.		69
Another Essay from our Old Friend.		28	Counterbalancing.	W. H. Booth	54	First Principles of Mechanics, The.	Lester G. French	54, 83, 111, 153, 206, 247, 279, 293, 322
Are They Pirates?		47	Counters ink.		377	Fly Wheels, Truing Off.		169
As Others See Us.		13	Contracting Ring Gauges.	B. F. Spaulding	259	Foreign Notes of Real Interest.		
A. S. M. E. Notes.		146	Combustion and Steam Making.	Wm. O. Webber	40	Barring Engine.		113
A. S. M. E. Papers, Notes from.		294	Connecting Rods, Angularity of.	Theo. F. Scheffler, Jr.	66	For the Note Book.		26, 59, 91, 122
Anvil and Fiddle Again.	Oberlin Smith	206	Combination Radial Drill.		340	Foundry and Shop, Notes from.		
Belt Shifter, A Novel.		31	Corrosion of Aluminum.		182	About Cores	Robert Grimshaw	175
Bevel Gear Planer, A New.		20	Core Oven Doors.		99	Forces, Graphical Representation of.		258
Belt, The Round.	John H. Cooper	13	Cutter Grinder, An Impromised.		61	Fresh from the Press.		32, 64, 94, 124, 157, 187, 220, 253, 285, 314, 346
Belgian Shop, Modern Methods in a.	Arthur Bollinckx	97	Cutting-off "I" Beams.		356	Friction.	E. Lawrenz	370
Beach, Alfred Ely.		177	Cylinders, Hydraulic.		320, 321	Gauge, Direct Reading Micrometer.		259
Bevel, Adjustable, for Drawing.	B. F. Spaulding	365	Cylinders, Thick.	F. F. Hemenway	351	Gas Engine, The.	Geo. Richmond	287, 353
Bicycle Factory, A Visit to a.	Fred H. Colvin	74	Davis & Egan Cock Grinder.		225	Gauge for Cutters of Nut Milling Machines.		175
Bicycle Hub Forming Lathe.		282	Davis, E. F. C.		21	Gear Wheels, Strength and Proportions of.	J. L. Klindworth	48
Boiler Reform.	John J. Hogan	127	Daily vs. Technical Papers.	Editorial	268	Gear Teeth, The Strength of.	George Guntz	43
Boilers, Blow Out Pipes on.	W. A. Carlile	179	Depth Gauge.		322	Gear Cutters, Two Old.		263
Boilers, Useless Tubes in.		112	Details, Foreign Engine.		350	Gear-ology.	F. W. Clough	42, 106, 264
Boring and Turning Mills.		150, 244, 324	Discipline, Different Brands of.		172	Gear Wheels, Proportions of.	H. Heyrodt	308
Boilers and Engines, Efficiency of.	Theo. F. Scheffler, Jr.	257, 288, 334	Drawing Room, Saving Time in.	E. R. Plaisted	354	Good Way to Lose Trade, A.		
Boring Bar, An Improved.	J. W. Boynton	47	Drawings for the Shop.	Prof. C. H. Benjamin	3	Grinding and Polishing Machine, A Surface.		
Boring Cylinders Without Stopping.		297	Drill, High Speed.		260	Grindstones.	Roving Contributor	356
Boilers, Cutting Holes in.	"Quirk"	326	Drill, Twenty-one Inch.		114	Hammer, A Draftsman's.	Geo. A. Fairbanks	296
Boilers, Selecting.	W. H. Wakeman	366	Drill Jigs, Something About.	E. Lawrenz	297	Handy Tools for Pattern Makers.	Phil. Pastre	224
Boiler, The Webber Vertical.		325	Dry Dock Pumping Plant.	John H. Cooper	359	High Speed Engines, Proportions of.		177
Boring Mills, Defects in.		324	Easy Shop Talks, Gears Economizers, The Use of.	G. E. A. Ring	145	High Speed Once More.	Editorial	300
Boring Mill, A Handy.	A. Bollinckx	257	Eccentrics, Repairing and Shifting.	W. H. Wakeman	228	Hints, Drawing-Room.	Chas. L. Griffin	386
Boring Bar, An Improved.		28	Economy of Specialism	Editorial	46	How Much Stock Will You Carry?	W. L. Cheney	66
Brains and Economy.	W. De Sanno	266	Education.—1, An Engineer's.	W. H. Wakeman	290	Honesty in the Shop.	Editorial	234
Breakdown, A Peculiar.		312	Emery Wheels and Grinders, Making.		240	Horizontal Floor Boring and Milling Machine.		249
British Work Shops, Some Special Features Seen in.	John E. Sweet	159	Enlarging the Shop.	Fayette Frankway	265	Horse Power of Steam Engine.	Glen Frankson	369
Caliper Adjustment, Novel.		114	Engineer's Education.—2, An.	W. H. Wakeman	319	How Many Bricks in this Chimney?	Robert Grimshaw	4
Cone Pulleys, Calculating.		28	Engine, Gas.	George Richmond	352	How Far is This True?		87
Can I Get a Patent?	Geo P. Whittlesey	6	Engine, Universal High Speed		372	Hurlbert & Rogers Shop, The.		238
Case of Extravagance, A.	Walter B. Snow	101	Engine Beds, Setting, Flints.	W. H. Booth	178	Hyperbolic Curve, The, Various Methods of "M. E."		301
			Engine Repairs.		309	Constructing It		
			Engine Lathe, A New Turret.		63			

3NT
MACHINERY.
VOL. II.

Article.	Author.	Page.
Hydraulic Cylinders, Strength of.	Juan de D. Tejada	274
Hydraulic Cylinders, Strength of.	.....	320
How and Why.	.....	27, 59, 90, 121, 152, 184, 214, 246, 281, 312, 342
Improved Valve Rod Hooks.	.....	72
Inspector's Truck, An.	.....	120
Inventions—Good, Bad and Indifferent.	Editorial	108
Inventive Faculty, Two Classes of.	.....	341
Inertia Governor, The.	J. Begtrup	76, 109, 132
Iron and Steel.	Grant Hood	307
It Made a Difference	.....	24
Jaunt in Jersey, A.	Fred H. Colvin	53
Keeping Blacksmiths Cool.	.....	354
Key Seater, A New.	.....	339
Key Seater, A Portable, Knickerbocker Engine, The.	.....	244
Lathe, A Heavy.	.....	340
Lathe Centers, Looking After.	.....	149
Labor's Value.	W. S. Rogers	224, 275
Lathe, A New Pit.	.....	261
Lathe Fixture, A Special.	.....	121
Lathe, Tail Stocks of.	J. Richards	358
Lathe, Turret Engine.	.....	371
Lawsuit, An Interesting.	.....	133
Letter from an Old Engineer, An Interesting.	George Escal Sellers	65
Levers, Few Words About.	.....	363
Levers, Safety Valve.	William Cox	368
Looking Backward and Forward.	John J. Grant	1
Magnesium as a Constructive Material.	R. H. Thurston	255
Machine Shop Economy Consumption of Supplies.	Robert Grimshaw	100
Machine Design.	Junior	355
Machine Design.	F. W. Clough	345
Machinists, For Young.	Milo	373
Machine Shop Arithmetic.	.....	30, 57, 89, 119, 151, 183, 213, 245, 279, 311, 341, 375
Machine Drawings for the Shop.	Arthur B. Babbitt	181
Machine Shop Notes.	Robert Grimshaw	131
Machine Designing, Systematic.	H. M. Norris	237
Machine, Sand Sifting.	.....	333
Machine Shop, In a Small.	F. E. G.	358
Machine, The Calculating.	George B. Grant	50
Machine Builder's Records.	Henry Hess	41
Machinery, Erection of.	F. W. Clough	9
Mechanical Drawing, Plain Talks on.	Louis Rouillion	116, 142, 173
Manufacturers' Notes.	.....	203, 235, 266, 308, 330, 367
Machinery's Register.	.....	32, 64, 94, 124, 156, 187
Mechanics, The First Principles of.	Lester G. French	54, 85, 111
Mechanical Draftsmanship, Practical Hints on.	Thos. P. Pemberton	153, 206, 247, 279, 298, 322
Mechanics' Fair, The.	.....	95
Mechanical Pointers for Draftsmen and Mechanics.	J. Begtrup	226
Milling Out Keys.	.....	100
Micrometer Set, A Six Inch.	.....	62
Milling Cutters, Spiral Flutes in.	.....	131
Milling Cutters, Inserted Tooth.	Robert Grimshaw	86
Milling Cutters, Speed of.	.....	374
Milling Cutters, Suggestions About	.....	353
Milling Machines, Modern.	.....	78
Milling Machines, Duplex Double Column.	.....	29

MACHINERY.—INDEX TO VOL. II.

Article.	Author.	Page.
Miller, Double Head Specimen.	.....	261
Milling Machine, A Large Milling Machine, The Vertical.	John Becker	31
Milling Machine, An Extra Heavy Shaft.	.....	278
Milling Machine, The Universal.	.....	351
Milling Machines, About.	M. C.	359
Milling Machines, Some Early.	.....	361
Milling Machines, About.	.....	359
Milling Machine, "States"	.....	114
Milling Cutter, Handy.	.....	107
Milling Cutter, A Cheap.	.....	5, 44
Milling Cutters, Suggestions About.	.....	353
Milling Cutters, Speed of.	.....	374
Modern Machine Shop.	.....	22
Modern Foundry Plant, A.	.....	115
Notes from Notown.	Ichabod Podunk	15, 45, 72, 104, 141, 168, 229, 262, 305, 361
New Plants, Something about "Starting Up."	Wm. O. Webber	16
Starting Fires, etc.	.....	299
Novelty vs. Economy.	.....	288
Notes of Interest, Two.	.....	167
Old Shop, Observations in an.	.....	365
Old Tools.	.....	226
Pattern Shop Supplies.	John M. Richardson	166
Paying for Brains.	Editorial	146
Paying Labor, Different Methods of.	.....	98
Pattern Shop, Handy Work in the.	"Cisnarf."	260
Packing, Semi-Bronze.	.....	223
Pattern Making.	.....	58
Pattern Making, A Few of the Snares of.	John M. Richardson	243
Pile Driving.	.....	326
Pipes, Rule for Safe and Bursting Strains of Tubes and Hollow Cylinders.	John H. Cooper	321
Philadelphia Shops, Among the.	S Ashton Hand	242
Piece Work Question, One Way of Looking at the.	I. B. Rich	97
Piece Work, Machinist's.	W. H. Chappell	239
Pipe Taps, Cutting Threads on.	R. E. Marks	371
Planimeter, A Handy.	.....	19
Plates, Improved Hand-hole.	.....	18
Planer Job, A.	.....	62
Planing an Arc.	J. W. McCurdy	358
Poor Locomotive, The.	Editorial	14
Power Transmission, An Extraordinary Example of.	John H. Cooper	230
Problems, Working Out	.....	389
Tackle.	.....	389
Practical Problems.	John T. Usher	18, 70, 164
Propotion.	.....	315, 375
Pumping Engine, Calculating the Duty of a.	.....	102
Pumping Engine, Test of a.	.....	5
Pump Refused to Draw Water, Why a.	Wm. M. Francis	85
Putting on Valves.	Peter H. Bullock	304
Reading the Vernier.	.....	7
Room for Improvement.	.....	278
—Suggestions.	.....	278
Roll Lathes and Roll Turning.	A. Randolph	10
Rope Driving and Gears.	Samuel Webber	90
Safety Valve Levers.	Wm. Cox	368
Selecting Boilers.	W. H. Wakeman	366
Setting Eccentrics of Locomotives.	Fred E. Rogers	118
Sessions Foundry Co., The.	.....	179
Shafting, Lining Up.	Robert Grimshaw	51
Shapers, Some Modern.	.....	271
Shrinking Fits.	.....	231
Shop Kinks, One Kind of.	T. Head	375
Shop Work.	W. D. Forbes	2
Slide Valves—on Paper.	"Quirk"	7
Setting.	.....	310
Sliding Surfaces, Modern Data on the Phenomena of.	John H. Cooper	144, 163
Slide Rule, How to Select a.	Wm. Cox	265
Some Foreign Ideas.	.....	16
Some Hartford Notes.	.....	93
Special Combination Machine.	.....	374
Speed of Milling Cutters	.....	365
Sphere, The Question of.	Slow Pay	365
Square Threaded Screws, Cutting.	Boyd Harriman	129
Steam Engine, The Condensing.	F. F. Hemenway	295, 386
Steel, Practical Notes On.	S. W. Goodyear	170
Steel, Some Notes on Upsetting.	Boyd Harriman, T. D.	66
Steam Engine, Horse Power of.	Glenn Frankson	369
Steam Plant Management, The Personal Factor in.	.....	61
Steam Engine, The.	F. F. Hemenway	136, 369
Steam Engineering, Talks on.	Chas. L. Hubbard	360
Steam, Heat and Cylinder Condensation—Compound Engines.	F. F. Hemenway	160
"Steam Jacket" Open Feed Water Heater.	.....	282
Steels, Tool.	B. E. D. Stafford	103, 139
Strikes May Be Avoided, How.	.....	37
Stiles & Fladd Press, The.	.....	278
Starrett's Center Tester.	.....	310
System, Something About.	W. L. Cheney	309
Tail Stocks of Lathes.	.....	358
Tap, A New Adjustable.	.....	173
Taps, Pipe—Threads on Tallest Chimneys on Earth.	R. E. Marks	371
Taper Turning Tools.	W. Barnet Le Van	7
Teeth of Mills, The	.....	176
"Tet" Angle vs. Tetrangle.	Winthrop Ingersoll	33
"Tet" Angle or "Pet" Angle.	.....	291, 377
Tet Angle.	R. Grimshaw	357
Tetragones Again.	F. G. Hubbard	288
Threw the Belt Off.	F. W. Seidensticker	377
Theoretical Education and Practical Experience.	G. W. Scott	120
They are Patented.	.....	52
Thick Cylinders.	F. F. Hemenway	351
Tien-Tsin to Shan-Hai-Kuan, The Railroad From.	.....	182
Tool Holder, Auxiliary.	.....	369
Tool Room, In a Small.	G. E. A. Ring	181
Tornado, Before the.	.....	363
Torpedo Boat Destroyer, Another.	.....	63
Transmission of Power by Ropes, On the.	John H. Cooper	35
Tracings, Drawer for.	.....	266
Triangles, Draftsmen's.	.....	302
Turnbuckles, The Evolution of.	.....	326
Tubes, Pipes and Hollow Cylinders, Rules for Safe and Bursting Strains of.	.....	65, 371
Turret Engine Lathe.	.....	321

MACHINERY.—INDEX TO VOL. II.

Article.	Author.	Page.	Article.	Author.	Page.	Article.	Author.	Page.
Tweedell, Ralph Hart.	.....	25	Welding Cast Iron.	.....	376	Worthington's Shops,	.....	135
Valves of Locomotives,	Fred. E. Rogers.	327	What Broke the Shaft.	.....	376	The Henry R.	.....
Setting.			Wheel, A Faulty De-	Peter H. Bullock.	106	Wrench, A Simple	.....	2
Value Received, For.	W. H. Wakeman.	165	signed.			Ratchet.	.....
Wage Question, The.	.....	77	Where the Line must	Editorial.	298	What Mechanics Think.	.....	27, 60, 92, 122, 154, 185,
Weldless Ring, Mak-	.....	85	be Drawn.			216, 249, 285, 313, 343, 376		

Drawing-Room, Pattern Shop and Foundry.

Article.	Page.	Article.	Page.	Article.	Page.	
American Moulder.	147	Drawing-Room Calculations.	212, 226, 245, 265	Pattern Maker's Tools.	.....	322
Angularity of Connecting Rod	66	274, 289, 301, 309, 320, 321, 341, 360, 368, 375	Patterns, Color of.	.....	119, 156	
Bevel, Adjustable.	362	Engine Details.	310, 335	Pattern Making.	.....	222, 223, 226, 243
Calculations for Drawing-Room.	212, 226, 245	Foundries.	115, 179	Pattern Shop Supplies.	.....	166, 196
265, 274, 284, 301, 309, 320, 321, 341, 360, 368		Gears.	48, 145, 190, 195, 201, 214, 218, 264, 308	Practical Drawing.	95, 116, 142, 173, 203, 235,	
Color of Patterns.	119, 156	Helical Gears.	201	266, 303, 330, 367		
Core Prints.	119, 156	Hints for Drawing-Room.	194, 209, 250, 266,	Safety Valve Lever.	.....	368
Drawing-Room Hints.	209, 250, 266, 283, 291,	283, 291, 292, 336, 344, 354	Sand Sifter.	.....	333	
292, 336, 344, 354		Ink Bottle Holder.	155	Session's Foundry.	.....	179
Drafting Tools.	194, 283, 291, 296, 302, 362	Machine Design.	191, 206, 237, 345, 355	Supplies for Pattern Shops.	.....	166, 196
Drawing for the Shop.	3, 181, 185	Mechanical Drawin	95, 116, 142, 173, 208, 235	Tee Square.	.....	74
Drawing, Practical.	95, 116, 142, 173, 203, 235,	266, 303, 330, 367	"Tet" Angles.	.....	253, 291, 357, 377	
266, 303, 330, 367		The Machine Shop.	.....	Tools for Pattern Maker's.	.....	322

The Machine Shop.

Article.	Page.	Article.	Page.	Article.	Page.
Aluminum Alloy to Replace Brass.	171	Filing, Bevel.	241	Notes from Notown.	15, 45, 72, 104, 141, 168
American Moulder.	147	File Holder.	249	211, 229, 262, 305	
Among the Shops.	12, 73, 163, 242, 258	Finishing Cut in Cylinder.	154	Novelty vs. Economy.	299
Annealing Cast Iron.	288	First Casting of Iron.	113	Old Tools.	167, 198, 365
Angular Work, Measuring.	87	Floor. Shop.	249	Ordering Work.	20
Belt Shifter, A Novel.	31	Flanges, Clamping.	131	Oven Doors, Core.	99
Belts.	27	Flue Cutter.	92	Peculiar Breakdown, A.	312
Bell Chucks.	92, 155, 187	Flasks.	190	Phenomena of Sliding Surfaces.	144, 163, 217
Belgian Shop, In a.	97	Forcing Fits.	212	Pipe Taps.	371
Bevel Filing.	241	Foundry and Shop.	175	Planer Job, A.	62, 358
Bicycle Factory, Visit to.	74	Foundry, Session's.	179	Practical Problems.	18, 70, 164
Billings & Spencer Co.	210	Foreign Engine Details.	310	Practical Notes on Steel.	170
Blacksmiths, Keeping Cool.	354	Foundry, Worthington Co's.	115	Proportion.	311, 375
Boring Bar, Improvised.	28	Friction.	370	Reading the Vernier.	8
Boring Tool.	313	From Small Beginnings.	199	Repairing a 12-Ton Housing.	343
Boring Cylinders without Stopping.	257	Gauges, Contracting Ring.	259	Roll Lathes and Roll Turning.	10
Boring Mills, Defects in.	324	Gear Cutters, Two Old.	263	Sand Sifting Machine.	333
Boilers, Cutting Holes in.	326	Gear Wheels and Teeth.	27, 43, 48, 145, 195, 201	Screwing Pieces Together.	197
Boring Bar, Improved.	47	214, 218, 284, 308, 313	Screw Cutting.	129, 345	
Brains and Economy.	266	Gearology.	42, 106, 264	Session's Foundry Co.	179
Breakdown, A Peculiar.	312	Grinder, Improvised Cutter.	61	Shop Work.	2
Casting, First Iron.	113	Grindstones.	356	Shop Problems.	216
Cast Iron, Annealing.	288	Gun Factory.	299	Shrinking Fits.	231
Cast Iron, Welding.	376	Helical Gearing.	201	Shop Floors.	249
Castings, Cost of	215	High Speed Drill.	260	Shrinking and Forcing Fits.	212
Casting Names on Bed and Frames.	222	Holes in Boilers, Cutting.	326	Sliding Surfaces.	144, 163, 217
Calculations, Machine Shop.	361	How Much Stock Will You Carry?	66	Small Tool Room.	181
Calipers, Nove.	218	Hydraulic Cylinders.	187, 274, 283, 310, 321	Small Beginnings.	189
Caliper Adjustment, A Novel.	114	Inspector's Truck.	120	Special Lathe Fixture.	121
Center Square.	251	Inserted Tooth Milling Cutters.	86	Square Threaded Screws.	129
Chuck Drill.	377	Iron and Steel.	307, 345	Steel.	86, 103, 139, 170, 307, 345
Chuck Wrench, A Good.	190	Itemized Cost of Castings.	315	Strength of Gears.	43, 48, 195, 214, 218, 284, 308, 313
Clamping Flanges.	131	Jigs, Drill.	297	System, Something about.	306
Collars, Tightening Metal.	185	Lathe Centers, Looking After.	149	Tackle Problems, Working Out.	309
Core Oven Doors.	99	Lathe Fixture, A Special.	121	Tail Stocks.	338
Cone Pulleys.	28, 61, 3, 6	Levers, A Few Words About.	363	Taper Turning Tools.	176
Countersink.	377	Lining up Shafting.	51	Teeth of Mills.	33
Crank-Pin Turner.	218	Looking Backward and Forward.	1		
Cu ting Bolts.	283, 376	Locomotive Valves, Setting.	327		
Cutter Grinder, Improvised.	61	Locomotive Eccentrics, Setting.	118		
Cutting Speeds.	92	Machine Design.	355		
Cutting Off "I" Beams.	356	Machine Builders Records.	41		
Cylinder, The Finishing Cut in a.	154, 297	Machinery, Erection of.	9		
Dash Pots, Turning up.	122	Machine Shop Economy.	100		
Drill, High Speed.	260	Machine Shop, In a Small.	358		
Drill Jigs, Something About.	297	Magnesium as a Constructive Material.	255		
Eccentric, Setting Locomotive.	118	Metal Collars, Tightening.	185		
Economy.	100, 266, 299	Measuring Angular Work.	87		
Emery Wheels, Making.	240	Micrometer, Direct Reading.	259		
Enlarging the Shop.	265	Milling Cutters.	33, 86, 107, 131, 185, 209, 353, 374		
Engine Repairs.	309	Milling Machines.	5, 44, 78, 221, 319, 344, 351, 359		
Engine Details, Foreign.	310	Moulder, The American.	147		
Erection of Machinery.	9	Modern Machine Shops.	22		
Facing Tools.	60, 249				
Filing Down a Shaft.	313				

Engines and Boilers.

Article.	Page.	Article.	Page.	Article.	Page.
Barring Engine.	113	Boilers, Blow Out Pipes on.	179	Counterbalancing.	54
Boilers, Selecting.	366	Case of Extravagance.	101	Connecting Rod, Angularity of.	66
Boilers, Useless Tubes in.	112	Chimneys.	7, 98, 155, 289	Condensers.	98, 295, 336, 354
Boiler Reform.	127	Clearance and Compression.	205	Curve, Hyperbolic.	301
Boilers, Lawsuit about.	133	Combustion and Steam Making.	46, 155	Dry Dock Pump.	359

MACHINERY.—INDEX TO VOL. II.

Article.	Page.	Article.	Page.	Article.	Page.
Economizers. Use of.....	28	Evaporation of Water.....	257, 288, 316, 330	Safety Valve Levers.....	363, 368
Eccentrics.....	228, 249	Extravagance, Case of.....	101	Setting Slide Valves on Paper.....	7
Economical Pressure.....	71	Fly Wheel.....	106, 169, 223	Sheet Steel in Engine Construction.....	95
Efficiency of Boilers.....	257, 288, 334	Flanges, Clamping.....	131	Slide Valves.....	7, 60
Engine, Barring.....	113	Governor, Inertia.....	76, 109, 182, 216	Starting Up Plants.....	16, 38, 68
Engine Details, Foreign.....	310, 355	Gas Engines.....	287, 352	Steam Plant Management.....	61
Engines, Horse Power of.....	369	Horse Power of Engines.....	369	Steam Engine.... 136, 160, 177, 169, 300, 369, 371, 376	
Engines, High Speed.....	177, 372	Hyperbolic Curve.....	301	Tests.....	5, 102, 193, 257, 288
Engines, Rotary.....	109	Inertia Governor.....	76, 109, 182, 216	Valves, Setting.....	7, 28, 118, 327
Engine, Gas.....	257, 352	Pumping Engine, Test of.....	5, 102	Valves, Effect of Angularity of Rod.....	68
Engineers Education.....	29, 319, 360, 374	Pump Refuses to Draw Water.....	85	Valve Rod Hooks.....	72
Engine, Repairs.....	309	Pumping Plant, Dry Dock.....	359	Valves, Putting on.....	304
Engineering, Talks on.....	360	Ropes, Transmission of Power.....	35, 92, 99	Valves, Safety.....	368
Erecting and Starting Engines.....	16, 38, 68	Round Belt.....	13		

Educational.

Article.	Page.	Article.	Page.	Article.	Page.
Axle and Wheel.....	267	Friction.....	83	Mensuration.....	151, 213, 245, 279
Circles, Areas of.....	91, 151	Gears.....	145	Moments.....	153
Cube Root.....	119	Gravity.....	84, 110	Multipliers.....	341
Decimals.....	25, 93, 123	Heat.....	238	Pendulum.....	293
Drawing, Mechanical.....	116, 142, 173, 203, 235, 256, 303, 336, 307	Levers, Principles of.....	206	Power and Work.....	55
Factoring.....	152	Matter.....	54	Proportion.....	311, 375
First Principles of Mechanics.....	54, 83, 110, 153, 206, 247, 288, 293	Mechanics, First Principles of.....	54, 83, 110, 153, 206, 247, 288, 293	Pulley.....	247, 311
Formulas.....	89	Mechanical Drawing.....	116, 142, 173, 203, 235, 266, 303, 336, 367	Screw.....	247

Editorial.

Article.	Page.	Article.	Page.	Article.	Page.
Advertising.....	332, 364	Discipline—Different Brands.....	172	Losing Trade.....	78
A. S. M. E., New President.....	140	Economy.....	46	Locomotive, The Poor.....	14
Brains, Paying For.....	140	Finish, the Question of.....	46	Patents.....	382
Business in New England.....	32, 364	High Speed Once More.....	300	Prospectus.....	14
Change of Staff.....	108	Honesty in the Shop.....	234	Self Delusion.....	202
Circulation.....	364	In All America.....	300	Specialism.....	46
Daily vs. Technical Papers.....	268	Inventions.....	108, 202		

New Machinery.

Article.	Page.	Article.	Page.	Article.	Page.
Belt Shifter.....	31	Engines.....	113, 277	Milling Machines.....	29, 114, 261, 278
Boring Mill.....	150, 244, 249, 324	Gear Cutters.....	20	Micrometers.....	62, 259
Brazing Table.....	146	Grinding Machine.....	19	Planimeter.....	19, 252
Boiler.....	325	Gauge.....	125, 346	Pocket Companion.....	209
Calipers.....	114	Hand Hole Plates.....	18	Press.....	278
Calculating Machine.....	50	Indicators.....	125	Ratchet Wrench.....	2
Center Tester.....	310	Index Centers.....	182	Tool Holder.....	369
Change Gears.....	240	Injector.....	380	Tap.....	175
Condensers.....	246	Key Seater.....	244, 339	Vise.....	209
Disc Cutting Machine.....	183	Lathe.....	63, 93, 208, 261, 282, 340, 371	Wrench, Ratchet.....	2
Drills.....	31, 114, 260, 284, 340				

How and Why; and Notes.

Article.	Page.	Article.	Page.	Article.	Page.																																																																																		
Absolute Temperature.....	122, 342	Dies and Taps.....	184, 214	Preventing Rust.....	60																																																																																		
Air, Composition of.....	122	Draft Power.....	90	Properties of Metals.....	26																																																																																		
Air Pump.....	246	Dynamo, Power to Run.....	121	Pulleys, Speed of.....	59, 90																																																																																		
Alloy, Aluminum.....	91	Electric Lighting.....	246	Pumps.....	121																																																																																		
Aluminum, Alloy.....	91	Engine Breakdown.....	379	Ratios, Cylinder.....	59																																																																																		
Angles.....	184	Engineers' Society.....	27	Rope Drive.....	90																																																																																		
Area of Circles.....	91	Expansion of Steam.....	9, 184, 342	Rust, Preventing.....	60																																																																																		
Average Pressure.....	91	Falling Bodies.....	90	Safety Valves.....	121																																																																																		
Ball Bearings.....	59	Floor, Shop.....	70, 214	Shrinking Fits.....	281																																																																																		
Bearing, Metal.....	59	Forgings.....	312	Setting Engine.....	59, 214																																																																																		
Belting.....	59, 90	Foundry.....	185	Shops' Floors.....	50, 214																																																																																		
Boilers, Priming.....	122	Friction.....	27	Solders for Glass.....	91																																																																																		
Bolts.....	376	Fuel Waste.....	376	Spring, Spiral.....	122, 184																																																																																		
Breakdown of Engines.....	376	Gears.....	246	Calculating.....	26, 281, 376	Gluing Leather.....	59	Spiral, Spring.....	122, 184	Chimneys.....	90	Gravity.....	90	Steam, Flow of.....	281	Chucks.....	150	Hardening Steel.....	185	Steel Hardening.....	185	Circles, Area of.....	91	Heat.....	122, 185	Taps and Dies.....	184, 214	Circles, Squaring.....	91	Heating Surface.....	185	Temperature, Absolute.....	122, 342	Clearance.....	281	Horse Power.....	27, 121, 184, 214	Tandem Engines.....	122	Cold Storage.....	246	Hydraulic Rams.....	342	Tool Steel Forgings.....	312	Commutator Bars.....	122	Hyperbolic Curve.....	246	Turning Wrought Iron.....	342	Connecting Rod.....	63, 342	Indicating Engine.....	121	Valves, Setting.....	281	Corliss Valves.....	91	Learning a Trade.....	214	Valves, Corliss.....	91	Corrosion.....	57, 342	Mean Effective Pressure.....	27, 91	Whitening Brass Castings.....	342	Creating Power.....	121	Metals, Properties of.....	26, 59	Wrist Pin.....	281	Crank Pin.....	281	Milling Cutters.....	312	Wrought Iron, Weight of.....	26	Cylinder Ratios.....	59	Pipes, Weight of.....	91	Wrought Iron, Turning.....	342
Calculating.....	26, 281, 376	Gluing Leather.....	59	Spiral, Spring.....	122, 184																																																																																		
Chimneys.....	90	Gravity.....	90	Steam, Flow of.....	281																																																																																		
Chucks.....	150	Hardening Steel.....	185	Steel Hardening.....	185																																																																																		
Circles, Area of.....	91	Heat.....	122, 185	Taps and Dies.....	184, 214																																																																																		
Circles, Squaring.....	91	Heating Surface.....	185	Temperature, Absolute.....	122, 342																																																																																		
Clearance.....	281	Horse Power.....	27, 121, 184, 214	Tandem Engines.....	122																																																																																		
Cold Storage.....	246	Hydraulic Rams.....	342	Tool Steel Forgings.....	312																																																																																		
Commutator Bars.....	122	Hyperbolic Curve.....	246	Turning Wrought Iron.....	342																																																																																		
Connecting Rod.....	63, 342	Indicating Engine.....	121	Valves, Setting.....	281																																																																																		
Corliss Valves.....	91	Learning a Trade.....	214	Valves, Corliss.....	91																																																																																		
Corrosion.....	57, 342	Mean Effective Pressure.....	27, 91	Whitening Brass Castings.....	342																																																																																		
Creating Power.....	121	Metals, Properties of.....	26, 59	Wrist Pin.....	281																																																																																		
Crank Pin.....	281	Milling Cutters.....	312	Wrought Iron, Weight of.....	26																																																																																		
Cylinder Ratios.....	59	Pipes, Weight of.....	91	Wrought Iron, Turning.....	342																																																																																		

